WESTERN UPDATE #65

THE WESTERN NEWSLETTER FOR MF, LF, AND VLF EXPERIMENTERS

Available for business-size 25 cent SASE's, plus 60 cents per issue (or $7 per year)

from: Jim Ericson, 226 Charles St., Sunnyvale, CA 94086-6063

ACTIVE WESTERN BEACON STATUS (LIST COMPILED May 20, 1989)

FREQ(kHz)	IDENT	QTH	SKED INFO
162.00	T (dashes)	Sunnyvale, CA	24h/7d. A2 modulation 80% (+/-760 Hz)
163.80	FPV	Granada Hills, CA	Weekends. See alt. freq. 182.62 kHz.
163.88	M	San Diego CA	Intermittent.
166.503	C	near Morro Bay, CA	24h/7d.
167.25	AHN	Fallbrook, CA	Unknown.
169.96	NRE	San Diego, CA	24h/7d
175.225	MAX	Wheatland, WY	24h/7d CW. BPSK/ASCII by request.
175.703	FAW	Orem, UT	24h/7d.
176.26	CO	Glenwood Springs, CO	24h/7d Bob Cutter.
176.75	SR	Elgin, OR	24h/7d.
176.85	7FS	Belfair, WA	24h/7d.
179.0	MPM	Salt Lake City, UT	24h/7d. ASCII/CW alternating 5minutes.
179.54	WJ	Arleta, CA	Intermittent.
180.224	F	Los Banos, CA	FSK. By request.
180.80	XU	Sioux Falls, SD	24h/7d. BPSK/CW alternating 5 minutes.
181.17	IZJ	San Gabriel, CA	Daily. Silent 0700 to 1100 UTC.
181.288	MEL	San Jose, CA	24h/7d.
181.71	TLX	San Rafael, CA	By request. Steve McGreevy.
182.62	FPV	Granada Hills, CA	Weekends See alt. freq. 163.80 kHz.
182.672	G	Palo Alto, CA	24h/7d.
182.88	H, H2	Descanso, CA	24h/7d. Alt. Freq = 166.90 kHz.
183.160	PRK	Saratoga, CA	24h/7d.
183.63	PLI	Burbank, CA	Unknown.
184.016	EK	Sunnyvale, CA	24h/7d.
184.32	N3S	Mocksville, NC	Intermittent tests.
184.383	TI	Kingman, AZ	24h/7d.
184.39	HO	Pahoa, HI	By request.
184.43	V	Forestville, CA	24h/7d.
184.46	B	Fresno, CA	24h/7d. Boyd Skillin.
184.80	T (dashes)	Mountain View, CA	Intermittent.
185.0	ZYK	Redway, CA	24h/7d.
185.00	AU	Champaign, IL	0100 to 0600 UTC, 7 days.
185.49	AZ	Tucson, AZ	24h/7d. Alt. Freq. = 187.77 kHz.
186.80	BA	Lancaster, IL	24h/7d.
187.0	ELU	Simi Valley, CA	24h Saturday and Sunday on SSB.
187.252	TEXAS	NW of Ft. Worth, TX	24h/7d.
187.30	UPN	Cincinatti, OH	Occasional.
187.50	DCH	Berlin, MD	Off until September.
187.59	SM	San Jose, CA	24h/7d.
189.84	R	Nevada Test Site	Not recently heard. Status unknown.
190.4	OHH	Richmond Hill, Canada	Occasional testing.
525.+/-.76	T (dashes)	Sunnyvale, CA (WA6AJY), A2 mod 24h/7d. Ed Gelinas. Simulcast with T at 162.00.	
1624.75	CT	Pleasant Gap, PA	24h/7d.
1637.49	SS	San Rafael, CA	By request. Steve McGreevey.
1650.67	TI	Kingman, AZ	24h/7d.
1655.5	CO	Glenwood Springs, CO	24h/7d. Bob Cutter.
1658.062	Z2	9 mi. NW San Simeon, CA	Intermittent. Mike Mideke.
1661.35	U	San Diego, CA	Nites only. Steve Meyerpeter.
1687.28	D	Descanso, CA	6PM to 6AM daily Frank Cathell.

LOTS MORE SASES ON FILE

Non-Western listings are beacons currently being copied in the West, or they have SASE's on file with us.

MAILBAG: **Brice Anderson** got a new LowFER vertical completed, and **BA** was back on the air May 7th. So far, **YHO, UPN & 8LXJ** (all in the Cincinnati, OH area) have heard **BA**. Brice says, "I hear **YHO** and **UPN** daily, altho QRN has been fierce. I heard **TH** and **WI** the night of May 7th. My new vertical is 33-1/2 feet tall, plus the length of a piece of PVC pipe for a base insulator. The top hat is roughly 35 feet above ground and consists of twelve 15-foot wires with a skirt. A 7-1/2 foot spike sticks out the top. Thus it is a legal part 15 antenna! I have about 2000 feet of ground radials down, but have to pick up about 1000 feet when I mow. **BA** will be on 24h/7d all summer, except for storms."

News from **Mike Mideke** ! Mike reports, "Here is an addition to the crystal list from **WU#64**. As I sat down to order some crystals I discovered that I had dropped a row from the original list. Additions include 5885, 5889, 5902, 5910, 5914, 5926, 5935, 5952, 5956, 5959, 5969, 5977, 5985, 5989, and 6002. Other bits of news from here...the upper MedFER band continues to be just fine, even on nights when QRN completely covers even the strongest local LowFERs. Seems a shame there is no communications activity on the upper MedFER band. As to lower MedFERs, **Ed Gelinas** in Sunnyvale seems to be the only one on the air. So far I have no definite copy on him but will continue to try. Sometime this summer or fall I expect to QSY Z2 to the lower MedFER band, maybe with a Gelinas-type full helix antenna. I've got about 8 feet of 4-1/4" PVC sewer pipe here that looks awfully tempting. Am working on a whistler receiver design that involves simple modifications to the inexpensive Radio Shack "mini" audio amplifier. Details later."

Jim Weiss of Illinois writes, "Sorry to have been so out of touch. I got in about two months of low-band activity in December and January and picked up a few midwestern stations (**BA, UPN,** and a couple more) using my 'secret-weapon' antenna preamp driving a Palomar converter, or a command set or an aircraft ADF receiver. IF taps allowed running the signals into my spectrum analyzer which goes down to 150 cy bandwidth and of course gives visual display. Hard to get along without, once you've been spoiled!"

Boyd Skillin (B beacon, Fresno, CA) wrote to say, "Thanks for loaning your loading coil. It made it possible to get my beacon on the air much sooner than without it. I have now constructed my own coil using Litz wire from LF Engineering Company and the ferrite core from Amidon. The coil form is cardboard model rocket stock. The inductance at antenna resonance is 4.54 mH. I have virtually no time now for electronics (or anything else) because of a heavy teaching load. However, I still eagerly await the next issue of WU! The LowFER/MedFER people news is fascinating reading, and the technical articles are inspiring."

Ed Gelinas (T beacon, Sunnyvale, CA) says, "Thanks for publishing the LF Preamp/Coupler in the WU. I hope it will help someone out there who may be just starting out. It does keep BCI out of the receivers front end. I recently acquired a Yaesu FRG-7 with a vertical wire and antenna coupler. I have been listening for beacons in the 1620 to 1700 kHz area but have not heard any yet. I will be spending a week at Frank Raines park next month and will take complete receiving setups for both bands to see what is copyable." Note that Ed has QSYed both his beacons. They are now on 162.00 kHz and 525. kHz.

Doug Chalmers (WA6DMK of Palo Alto, CA) recently subscribed to **WU**. Doug notes, "I am currently listening with a Magnavox D2935 and a Sony AN-1 antenna. To date I have logged approximately 15 NDB's, and LowFER EK."

Robert Bond (WD6BCN of Oxnard, CA) is in the process of reworking his two HRO 50's, trying to build some coils for the 100 to 200 kHz band. If anybody has any extra coils, get in touch with Bob.

Jay Coote reports that, "187.5 kHz J has been QRT since January due to troglodyte neighbors, but I haven't given up and do want to get something on 1750m, and possibly the MedFER band."

Scott Mawhinney (T, Mountain View, CA) reports only intermittent beacon operation because he has been real busy lately.

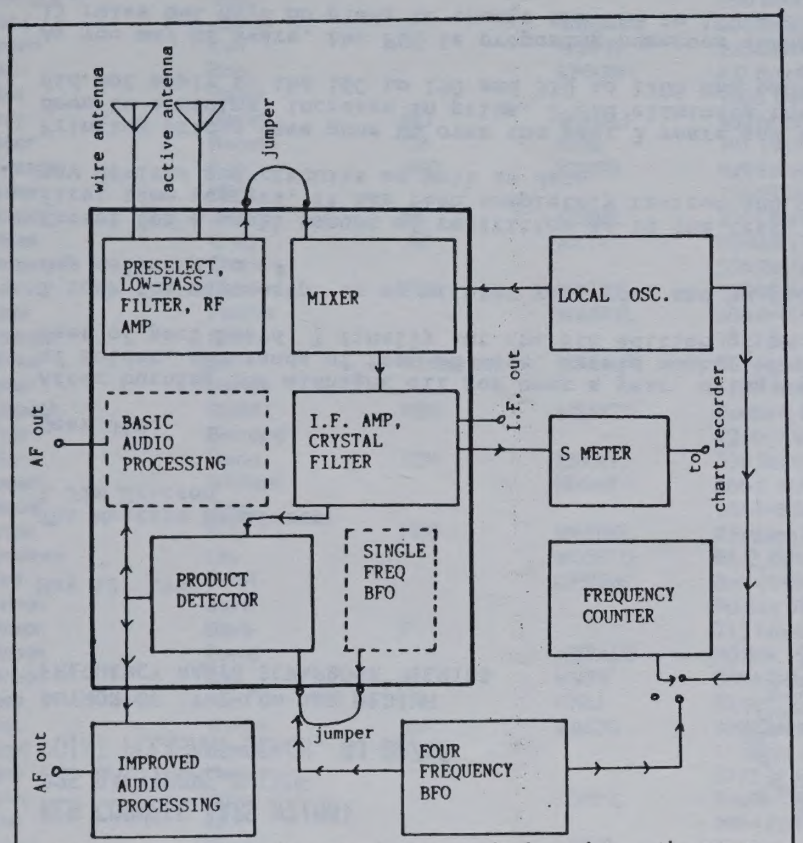
A MODULAR APPROACH TO RECEIVER CONSTRUCTION

by
Michael Mideke

The prospect of building any but the simplest of receivers can be rather intimidating. Even if the receiver builder has been fortunate enough to find a complete design that promises to do everything he needs, chances are good that some components will prove unavailable or impossibly expensive.

Being a bit short on both funds and engineering skills, my efforts to produce an acceptable LF receiver have involved a lot of "cut and try" work and a lot of oddly assorted components that have been scrounged, salvaged or acquired as random gifts. Working in this fashion is sometimes highly frustrating, but it can also be instructive and satisfying. Given time, determination and reasonable objectives, it is an approach that can yield good results. But it does not lend itself to the kind of compact packaging we have come to expect of commercial products.

Seeking a compromise that would afford operating flexibility and ease of modification, I settled upon a modular approach. A densely packed central unit contains most of the bare essentials of a single-conversion superheterodyne receiver. Numerous connections are provided for outboard modules. Jumpers allow some central unit circuits to be bypassed or replaced by external circuits.



MODULAR LF RECEIVER- The central unit is the large box on the upper left. Outboard units appear at right and bottom.

It may seem odd that the local oscillator (L/O) has been excluded from the central unit, but there were several good reasons for taking this route. My design objectives for the L/O included a high degree of electrical and mechanical stability. It was also important that the tuning rate be capable of resolving 1 Hz without undue discomfort. Available components were such as to dictate construction that was large and heavy compared to the rest of the receiver. Also, it was clear from the outset that the original L/O module was strictly temporary. It would have been folly to build a radio around the mechanical requirements of a makeshift assembly.

The other essential outboard unit is the frequency readout. I use a frequency counter (DSI 5500) and an attached box containing selector switch and several jacks. Ordinarily, local oscillator output is read directly (I spent so much "cut and try" time mentally subtracting my 420 kHz IF from the readout that in the end there was no point in correcting the counter to give actual receive frequency). The counter can be switched to read BFO output or an external input. It has not lost its general utility by being attached to a receiver.

A third very useful outboard extension is the relative strength meter. I use a 4" by 2½" movement that is well damped for LF work. It is calibrated in dB and reads the 120 Hz pasband output of the IF amplifier.

The audio possibilities of the central unit are somewhat restricted. The BFO operates at 420.400 kHz and, thanks to the crystal source divided by 16, it is not readily shifted. Five degrees of audio selectivity are available but they are all centered on 400 Hz. This frequency is a fair compromise for NDB and Lowfer work, but there are good reasons for using other audio notes. The central unit contains one sharp tunable notch filter. This is a valuable feature, but often one such notch is not enough. This is particularly true of NDB DXing, where it is not uncommon to find major interference on several frequencies within 20 to 40 Hz of a target signal. So to improve audio performance, I built two more outboard units.

A BFO was constructed with 4 crystal oscillators running continuously at 16 times the desired output frequencies. A divider can be switched to any of these oscillators, providing beat notes of 250, 400, 500 and 1,00 Hz. These choices reduce listener fatigue and provide good options for countering several types of interference. The frequencies chosen are also compatible with existing CCW filters and other audio processing schemes.

An outboard audio unit utilizes switched-capacitor filters whose crystal controlled clock is varied by selecting division ratios to match the BFO frequencies. This may seem like a lot of fuss over nothing, but in fact it allows the audio note to be changed without losing direct frequency readout. Two tunable notches are included in the audio module, as are provisions for 2 channels of tape output. The module even includes a microphone jack and switch for adding commentary to off-the-air recordings.

Any of the outboard modules can be replaced with minimal impact on the receiving system. Some can be dispensed with altogether. The outboard modules can be put to other uses without compromising their roles in the receiver. I recently found myself using the local oscillator as a VFO for 160 meter transmission. For field checks where only one frequency is of concern, the tunable L/O can be replaced by a suitable crystal oscillator. Everything can be left home except for the central unit, a very compact oscillator and an antenna.

All the present modules could be improved. Improvements can be carried out over an extensive period of time but they need never cause the system to be out of service for longer than the few moments required to change connections. A-B comparisons are always possible. There is no problem about being able to take enough time to decide about the merits of different modules designed for the same job.

Who knows, maybe one day all the pieces will fit into one small package and at last I'll have my "dream receiver"! Meanwhile, I get good results from an improbable looking collection of junk....and I've come to see that any receiver is a set of more or less integrated processes and not just a thing on the shelf.

KEN CORNELL (ARS W2IMB)
225 BALTIMORE AVENUE
POINT PLEASANT BEACH, NJ 08742

AUTHOR OF "THE LOW AND MEDIUM
FREQUENCY RADIO SCRAPBOOK" SERIES

May 12, 1989

The Western Newsletter
% Jim Ericson

Dear Jim,

After burning the midnight oil for over a year, using a couple of pounds of solder, thousands of feet of wire, untold number of parts and square feet of perf board, I finally put the 6th edition of my scrapbook to bed.

I took the manuscript to my printer yesterday and he promised me 7 to 10 day delivery.

Except for a small amount of repitition as to the text, to be fair to first time readers, it has been completely revised and up-dated with many new devices and circuits as well as data.

Printing prices have gone up over the past 3 years and to keep the cost down to a minimal increase in price, I did eliminate the FCC rules that did not apply to the 160 to 190 and 510 to 1705 kHz bands.

As you may be aware, the FCC is proposing numerous changes to their Part 15 rules but have no plans to change the 160 to 190 and 510 to 1705 kHz rulings.

The price for the 6th edition is $16.95 per copy postpaid USA. Foreign orders are to be in US funds and allow for 1 lb. shipping. All checks and M.Os. to be made payable to Ken Cornell.

I sincerely feel that this is the best edition I have ever published,

Personal 73

Ken

Ken

BK NOTES Things at this QTH continue busy! Between the new job and springtime chores there hasn't been a lot of extra time. I did manage to do some "overdue" repairs to my active whip antenna system. Seems that corrosion finally took out several connectors at the antenna end of my coax. In one of them the center (solid) copper conductor was completly corroded open! I'm also re-installing my modified 4-foot loop antenna which should allow me to continue receiving 76.2 kHz on my chart recorder, while running the BK LowFER beacon in the transmit mode at the same time.

Anyone need a mint-condition RAK-8 receiver for free? Jim Gordon donated this unit from his laboratory to the LowFER cause. It's a WW-II vintage CMX 46155-A weighing 74 pounds that tunes 15 to 600 kHz. First come first served. Too heavy to mail, so pickups only!

The Sunday morning LowFER ham net at 7:30 A.M on or near 3927 kHz LSB is still active. **A new Thursday evening net** has recently started on the same frequency (about 8pm). This should give other LowFERS who don't have 160m capability the chance to participate and share information.

Remember to send new SASE's when your supply here gets low. Due to time constraints at this end, I am sticking firmly to the policy of "no SASE's, no Western Update". Thanks! And we definitely need your inputs and articles for future issues. Let's hear from you!

Rich Tennant

WESTERN UPDATE ACTIVE LIST as of May 20, 1989

Anderson	Brice	BA	W9PNE	PO Box 14	Lancaster	IL	62855	(618)299-2441
Armstrong	Lloyd			3813 Lancaster Drive	Pueblo	CO	81005-3065	
Babcock	David		WA6EBH	2940 Cheyenne Road	Riverside	CA	92506	
Bahr	Leland	LEE	W0VT	914 Golden Bear Lane	Kingwood	TX	77339-2914	(713)359-5284
Baker	Brad			21024 Bear Creek Road	Los Gatos	CA	95030	
Balfour	Herb	OHH	VE3OHH	91 Elgin Mills Road West	Richmond Hill (Canada)	ONT	L4C4M1	(416)884-5355
Barlow	Ron		N4GJV	Route 1, Box 297	Cleveland	NC	27013	
Bauer	Frank	FB	W6FPO	PO Box 1086	Felton	CA	95018	(408)335-7392
Bittner	Mike			27215 Sunnyridge Road	Palos Verdes	CA	90274	
Bond	Robert		WD6BCN	1420 McLoughlin Avenue	Oxnard	CA	93035	(805)985-0159
Borglum	James			5549 Lesa Road	La Mesa	CA	92041	(619)464-3250
Bowers	William			11542 South Kirkwood	Stafford	TX	77477	(713)530-4364
Bradley	Dave		W6CUB	PO Box 2043	Watsonville	CA	95019-2043	
Bumpus	Carle			930 Idylberry Road	San Rafael	CA	94903	
Burhans	Ralph			161 Grosvenor Street	Athens	OH	45701	(614)593-8207
Buttschardt	Cliff	HDOMBAY, C	W6HDO	950 Pacific Street	Morro Bay	CA	93442-2327	(805)772-2132
Carter	Max	MAX		46 - 14th Street	Wheatland	WY	82201	(307)322-9439
Cathell	Frank	H,D,H2	K3YAZ	PO Box 535	Descanso	CA	92016	(619)445-8167
Chalmers	Doug			450 Adobe Place	Palo Alto	CA	94306	
Coote	James	J	WB6AAM	808 North Ave. 66	Los Angeles	CA	90042	(213)258-7490
Cornell	Ken		W2IMB	225 Baltimore Avenue	Pt. Pleasant Beach	NJ	08742	
Costa	Bob		KB6QXM	P.O. Box 600	Redwood Estates	CA	95044	(408)353-3656
Cripe	David			7908 Wellesley Court	Pasadena	MD	21122	
Curry	David	PLI	WD4PLI	852 N. Lima Street	Burbank	CA	91505	(818)846-0617
Cutter	Robert	CO	KI0G	701 19th Street	Glenwood Springs	CO	81601	
DeVaughn	Bob	NBD	K3NBD	829 Estella Street	Pittsburgh	PA	15210	(412)488-1479
Dorman	Mike			15635 21st Ave. SW	Seattle	WA	98166	(206)246-3796
Ericson	Jim	EK	KG6EK	226 Charles Street	Sunnyvale	CA	94086-6063	(408)773-8947
Farkas	Greg	AZ	AK7Y	PO Box 17074	Tucson	AZ	85731-7074	(602)749-4796
Farnsworth	Charles			506 Rutledge Drive	Lodi	CA	95240	
Faulkner	Charles	FPV	W6FPV	15844 McKeever	Granada Hills	CA	91344	(818)366-6210
Fisher	Montie		WA5TSL	808 Brett Drive	Edmond	OK	73013	
Forsman	Stan			1312 Burrows Road	Campbell	CA	95008	(408)374-2129
Gelines	Ed	T (dashes)	WA6AJY	557 N Bayview	Sunnyvale	CA	94086	
Grater	James			1136 S. Johnson St.	Lakewood	CO	80226-5113	
Hedspeth	Scott	N3S	WB4YZA	Route 4, Box 146	Mocksville	NC	27028	(704)284-4021
Helms	Bernard			4210-1 Walnut	Berrien Springs	MI	49103	
Holland	David	DCH	K3YAY	300 South Main Street	Berlin	MD	21811	
Hooper	William		KF6AR	366 S. El Monte Road	Los Altos	CA	94022	
Hoopes	John			1084-B Sergeants Drive	Robins AFB	GA	31098	
Horton	Bob	MSG	W6MSG	2 Fresno Street	Paso Robles	CA	93446	(805)238-2250
Humphrey	Lee		WD5BTU	Rt. 2, Box 449	Jasper	TX	75951	(409)384-9489
Isbell	Daryl		KB5EDW	Box 2146 C.S.	Socorro	NM	87801	(505)835-1395
Johnson	Dave			PO Box 389	Gainesville	FL	32602	
Johnson	Dave	F		713 Texas Ave.	Los Banos	CA	93635	(209)826-0841
Johnson	David		WB7ACG	PO Box 15646	Rochester	NY	14615-0646	(716)235-1104
Johnson	Don	AU	W9TIF	3304 Roxford	Champaign	IL	61821	(217)398-4020
Jones	Ron		K7RJ	9241 S. Toni Lee Circle	West Jordan	UT	84088	(801)561-2685
Jones	Wallie	WJ	W6SZQ	9090 Nagle Ave.	Arleta	CA	91331	(818)892-0552
Kassel	Charles			114 Church Drive	Mastic Beach	NY	11951	
Keane	Martin			5733 W. Grover	Chicago	IL	60630	
Keeley	Roy		KC4IMC	Route 3, Box 316 Salt Air Rd.	Theodore	AL	36582	(205)973-2516
Keller	Eb			2984 Fallwood Lane	San Jose	CA	95132	(408)263-6229
Kincaid	Nilan		W6EIG	5529 W. 140th Street	Hawthorne	CA	90250	(213)643-5269
Knight	David			4240 Fay Road	Syracuse	NY	13219	
Kraus	Howard	K2UD		372 Callodine Avenue	Amherst	NY	14226	
Layer	Hal		N6SPD	PO Box 27676	San Francisco	CA	94127	(415)661-6958
Lee	Mitchell	MEL	KB6FPW	172 North 24th Street	San Jose	CA	95116	(408)298-3026
Leonardelli	John		VE3IPS	Box 722, Station A	Downsview (Canada)	ONT	M3M3A9	(416)636-3300

Mallory	Mark	MPM	WB7CAK	5196 Cobblecreek Road #7K	Salt Lake City	UT	84117	
Manley	Dean		KH6B	2058 Ainaola Drive	Hilo	HI	96720-3638	(808)959-8257
Marshall	Dave			440 Larry Drive	Florissant	MO	63033	
Martin	Steve		NK3R	141 Bridgecreek Drive	Goose Creek	SC	29445	(803)797-3143
Mawhinney	Scott	T (dashes)		295 Pettis Avenue	Mountain View	CA	94041	(415)960-1041
Maxwell	James		W6CF	PO Box 473	Redwood Estates	CA	95044	(408)353-2094
Mideke	Mike	Z2	WB6EER	Box 123	San Simeon	CA	93452	
Morgan	Robert		KA0FTA	2817 West St. Anne	Rapid City	SD	57702	
Mussler	Mike			Bonanza Star Route	Nederland	CO	80466	
Nickerson	Rick	R	KB6JQU	3224 Saxonville Way	Sacramento	CA	95842	(916)348-1466
Olson	Keith	7FS	W7FS	E. 15470 Highway 106	Belfair	WA	98528	(206)275-2560
Otacilio P. de Sousa	Jose`			Rua Calisto 62, Recanto dos Vinhais	Sao Luis, MA, Brasil, PR8BNP		65070	
Owens	James	Q	NW0O	1363 Tipperary	Boulder	CO	80303	
Paschal	Ev			2005 K. Avenue	Anacortes	WA	98221	(206)293-8176
Pepe	Bill		WA2TDR	Box 1915	Bloomfield	NJ	07003	
Peterson	Art			851 31st Street	Richmond	CA	94804	(415)234-2014
Phillips	Ed	IZJ	W6IZJ	408 North Alabama Street	San Gabriel	CA	91775	(818)285-8308
Pomer	Zvi		4X1KT	5703 Caminito Norte	LaJolla	CA	92037	
Pomplun	Don		K2BIO	521 Van Buren Place	San Ramon	CA	94583	(415)829-7648
Post	Kendall			1842 Hoffman Street	Madison	WI	53704	(608)244-0500
Raney	David	UPN	WC8E	4128 Linden Avenue	Cincinnati	OH	45236	(513)791-0740
Rappold	Sam	ZYK	WB6ZYK	PO 1267/479 Briceland Road	Redway	CA	95560	
Ratzloff	Steve	SR	AA7U	900 Henderson / 60A	Sunnyvale	CA	94086-9059	(408)248-0343
Raven	Gregory	TEXAS	KF5N	4550 Sunnybank Court	Fort Worth	TX	76137	(817)485-6771
Reid	Frank		W9MKV	Box 5283	Bloomington	IN	47407-5283	
Remington	Sheldon	HO	NI6E	PO Box 2094	Pahoa	HI	96778	
Roberts	Todd	ABC	WD4NGG	PO Box 21413	Hilton Head Island	SC	29925	(803)681-8114
Satterthwaite	Ed			4189 Willmar Drive	Palo Alto	CA	94306	
Schick	D.H.			580 N. Buena Vista Dr.	Lake Alfred	FL	33850	
Schumacher	Jon	NVA	K7NV	Star Rt., Box 55255	Pahrump	NV	89041	
Seabury	Tom			PO 535	Diablo	CO	94528	
Seamons	John	JKS	KF6VO	95 Holstein Road	San Anselmo	CA	94960	(415)456-6090
Seden	Randy	ELU	WD6ELU	1272 Harold Avenue	Simi Valley	CA	93065	(805)583-5687
Sethman	Bob			92 Allen Plan	Donora	PA	15033	
Skillin	Boyd	B	K6MGX	3876 East Pico	Fresno	CA	93726	(209)222-0275
Smith	Glen		N6CX	220 Laurel, POB 475	Kenwood	CA	95452	
Smith	Randy			19515 Frederick Rd. #135	Germantown	MD	20874	
Snow	John		N6AMZ	3708 Judah Street	San Francisco	CA	94122-1227	
Spaulding	Fred		K1YQP	883 San Simeon Drive	Mountain View	CA	94043	(415)961-5018
Spencer	Chris	FAW	WB7FAW	722 West 1850th North	Orem	UT	84057	(801)225-7852
Statom	Mike			1604 S. Campbell Avenue	Alhambra	CA	91803	(818)289-7170
Stewart	Don			2617 Anza Street	Bakersfield	CA	93305-3109	(805)871-7024
Stinson	Dave	R, NTS	AB5S/7	3550 Paradise #740	Las Vegas	NV	89109	(702)732-4069
Sullivan	John			2069 Touraine Lane	Half Moon Bay	CA	94019	
Taylor	Al			112 Cook Road	Whitehorn	CA	95489	(707)986-7775
Thompson	Arliss	XU	W7XU	RR#3, Box 224	Sioux Falls	SD	57106	(605)368-2305
Tracy	John		WB7AMC	10431 Miller Avenue	Cupertino	CA	95014	(408)257-9585
Turner	Clint	CT	KA7OEI	145 West Street	Pleasant Gap	PA	16823	(814)359-2663
Vanderbeek	Herb	G, V, 8-dits	WY6G	630 Ashton Avenue	Palo Alto	CA	94306	(415)493-1726
Vandermaaten	Jim	SM	WB6QZL	1276 Tourney Drive	San Jose	CA	95131	(408)258-6872
Waldsmith	Gary	SUK	K4SUK	1441 Hound Hollow Road	Pilot Hill	CA	95664	(916)933-3815
Weiss	Jim		W9ZMV	c/o Radio WTAQ	LaGrange	IL	60525	(312)579-9104
Welch	James		KK6N	3071 Mauricia Avenue	Santa Clara	CA	95051	
Wilson	Rex	TI	KB7TI	4550 Vernetti Lane	Kingman	AZ	86401	(602)757-3649
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